

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

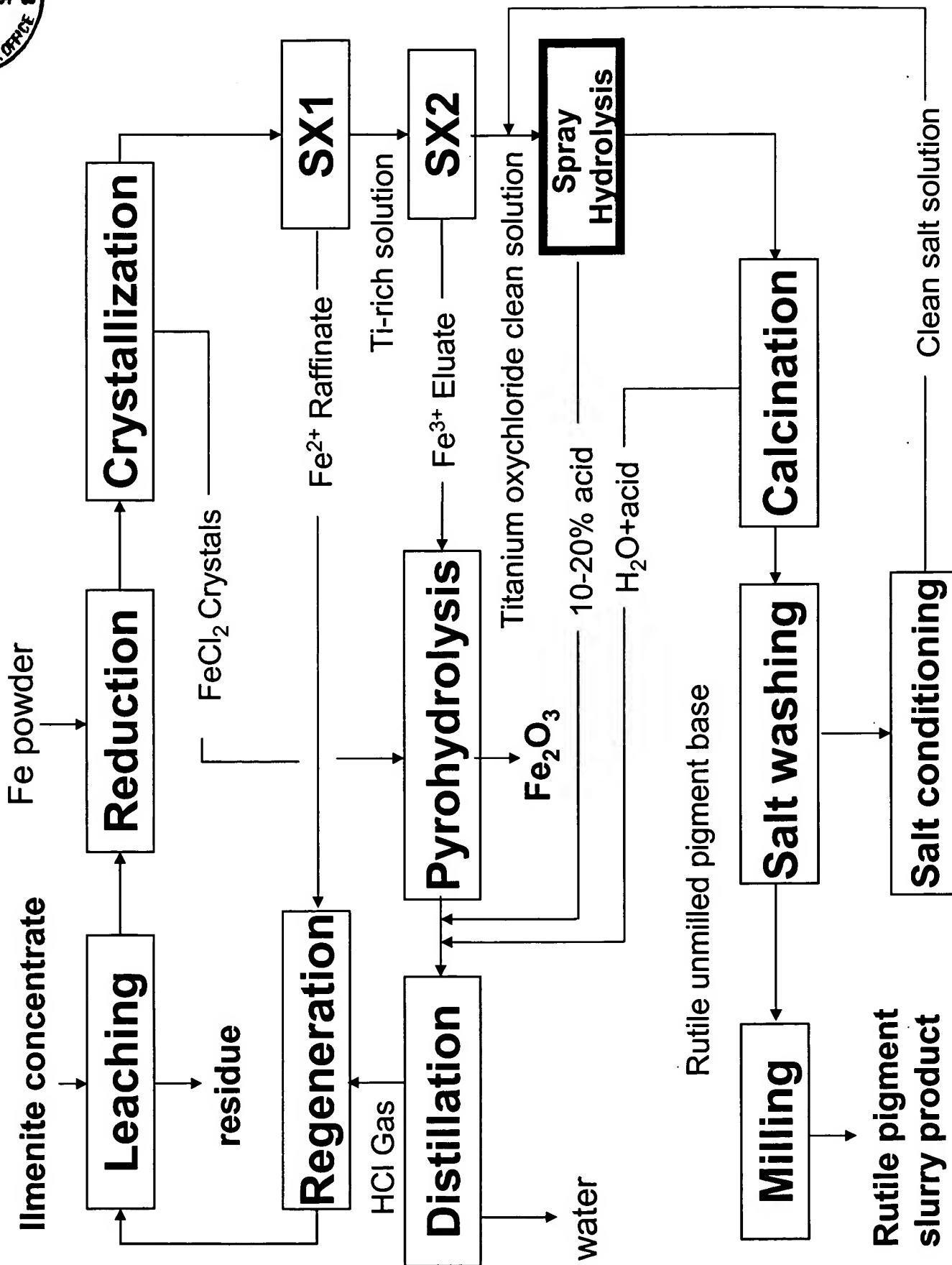
Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

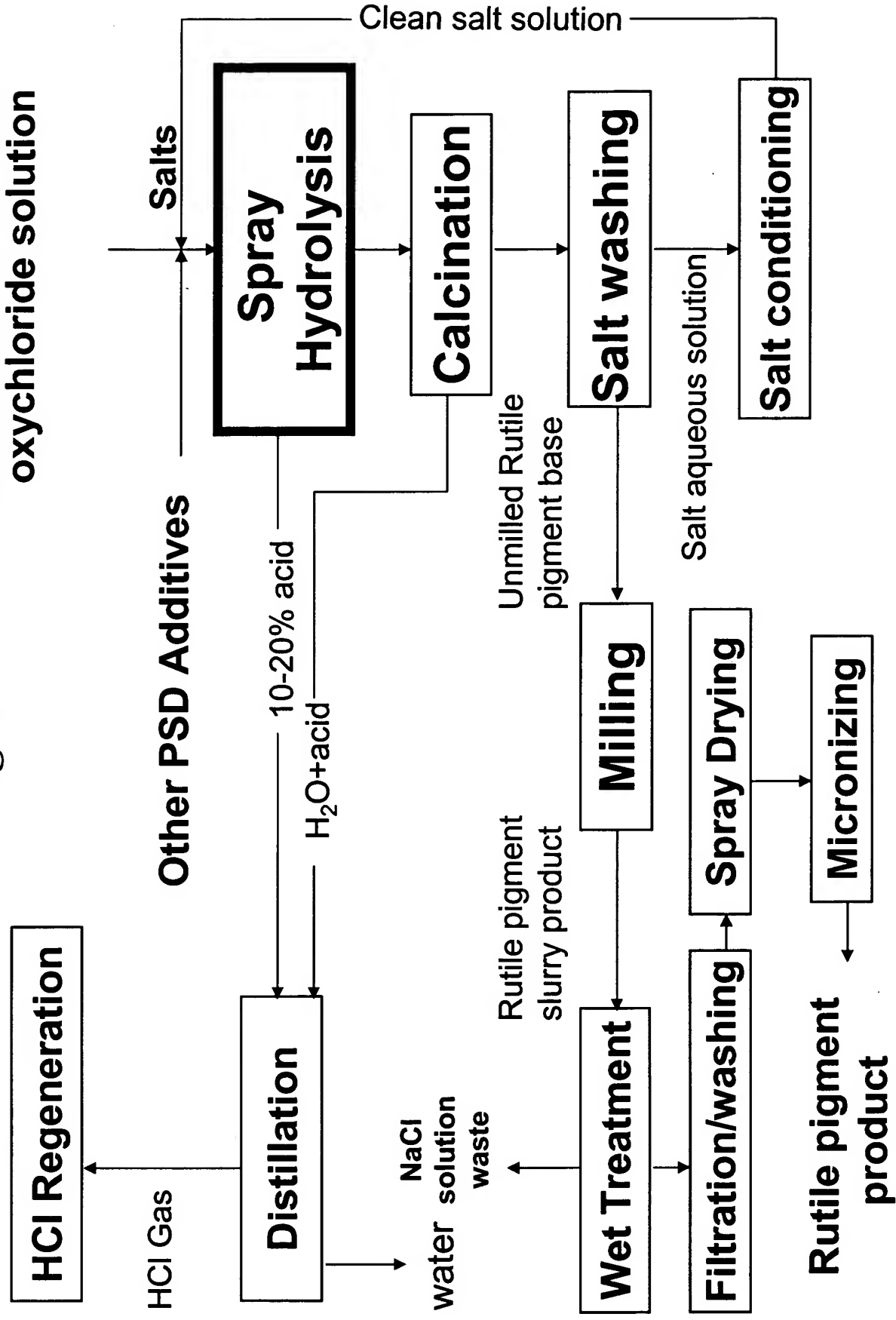
**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

**Fig. 1**



**Fig. 2** Aqueous titanium chloride or oxychloride solution



**Fig. 3**

KCl-LiCl-NaCl

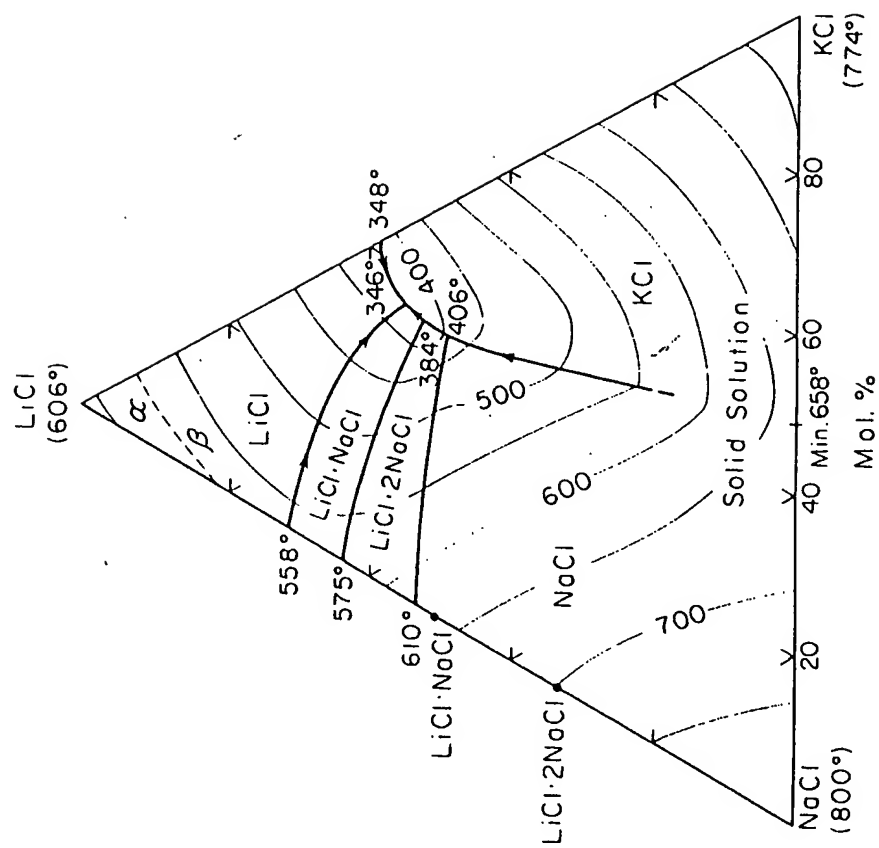
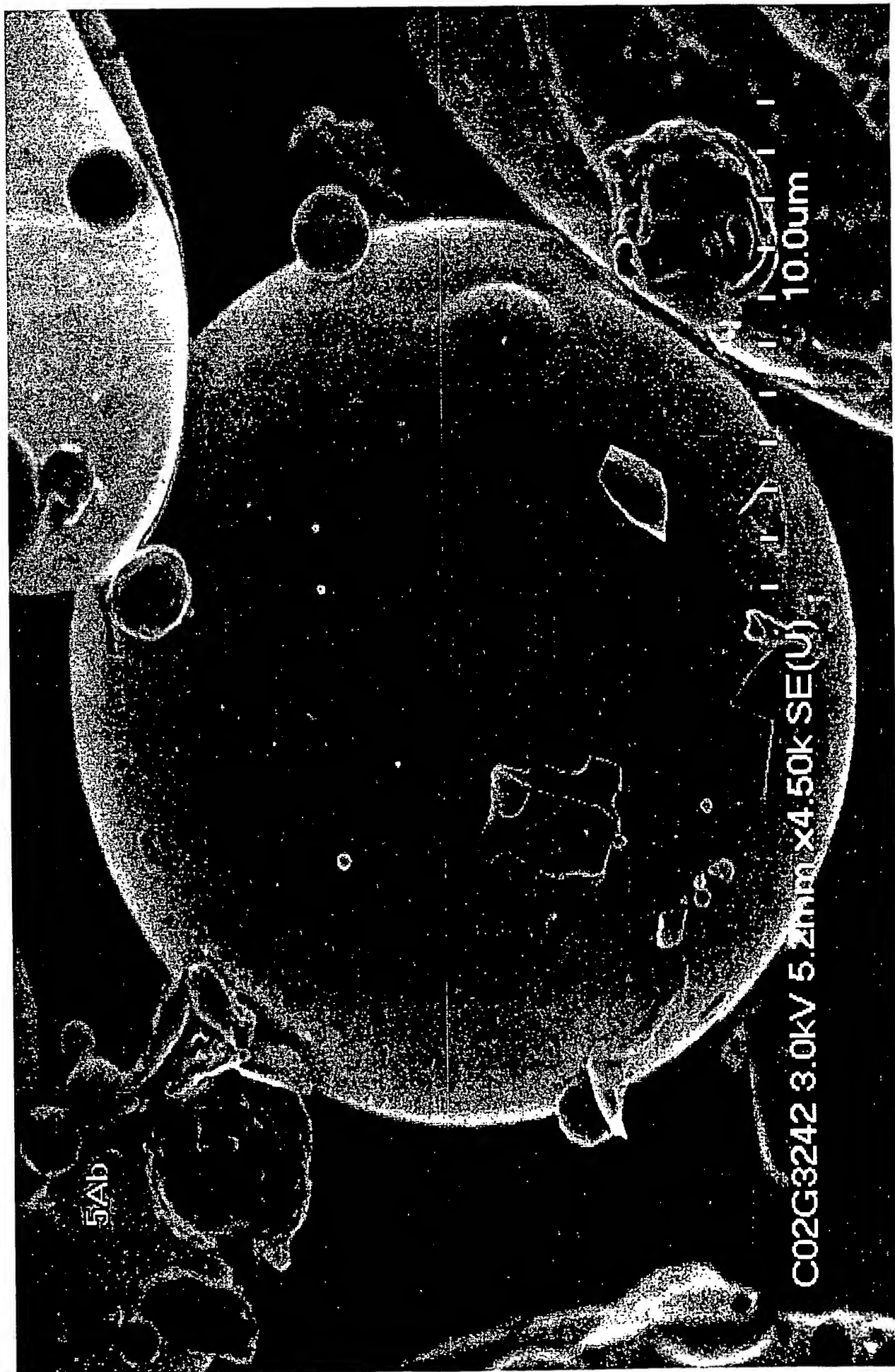


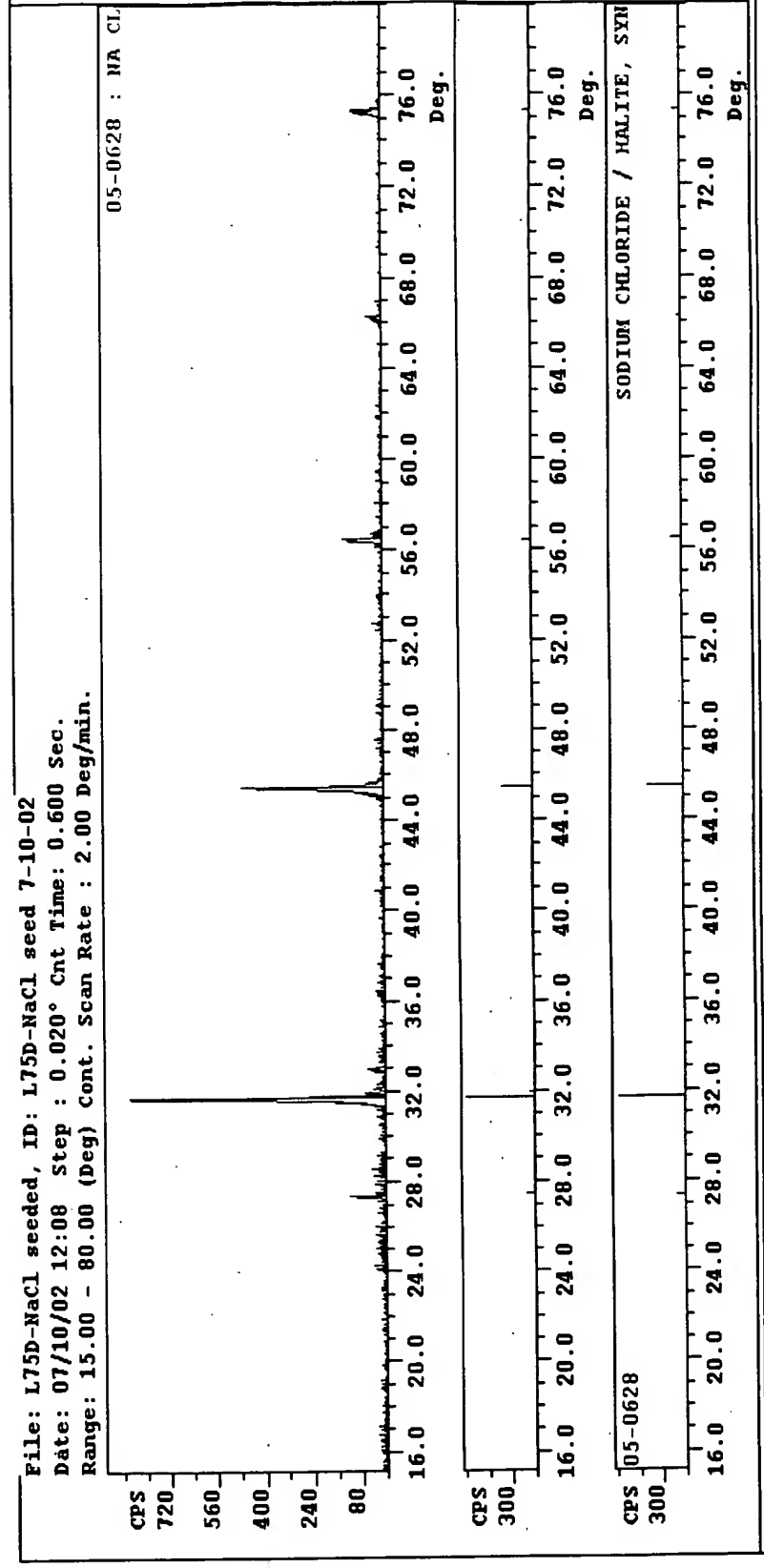
Fig. 4



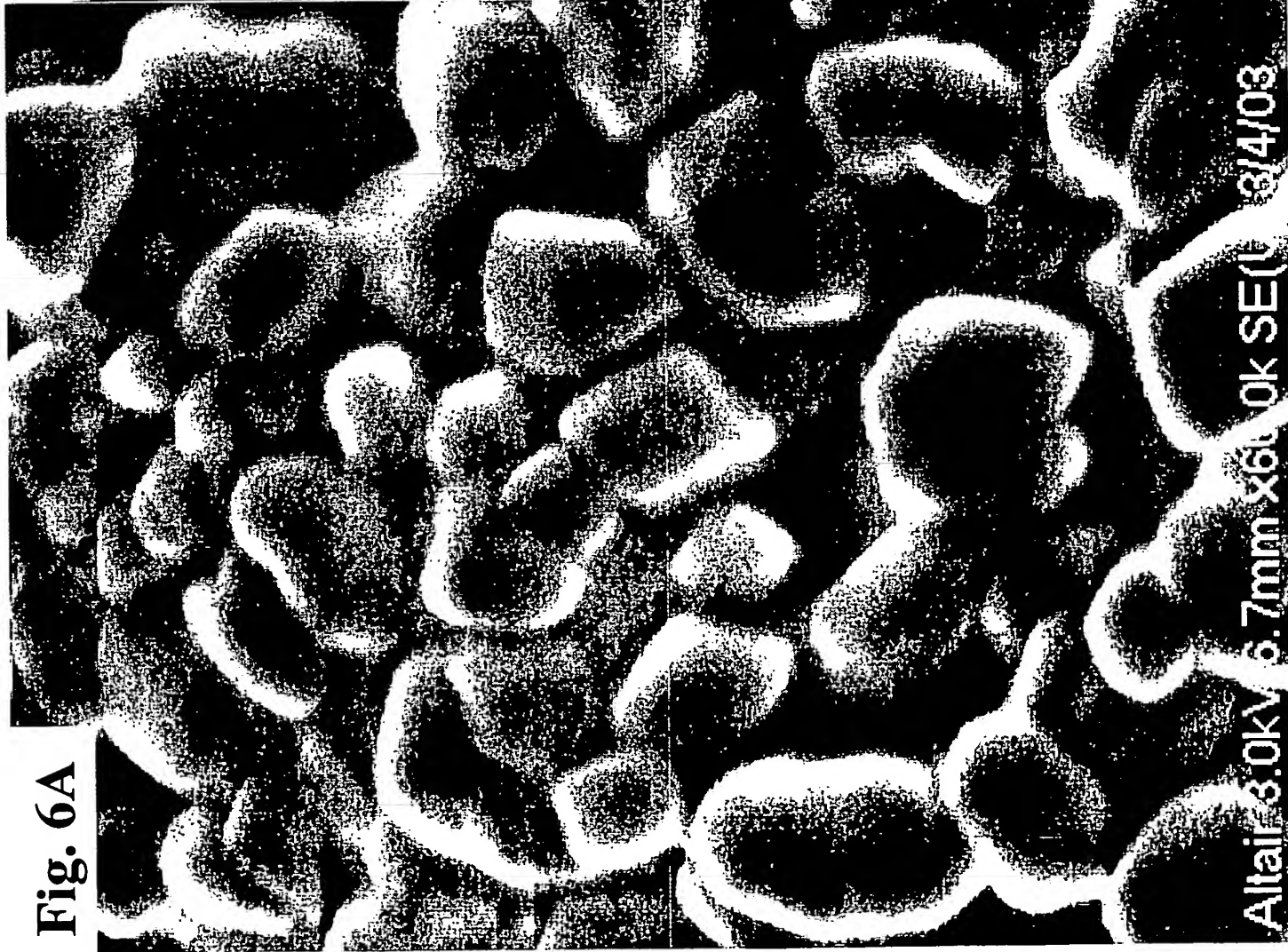
**Fig. 5**

**XRD scan of NaCl salted Ti-O-Cl-H amorphous  
intermediate.**

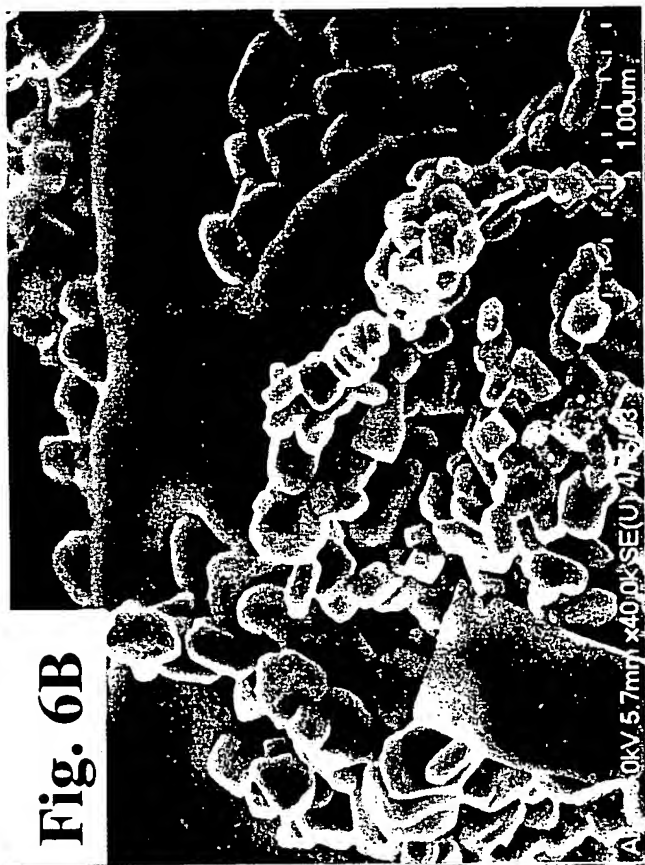
**No TiO<sub>2</sub> crystal forms were detected by the XRD.**



**Fig. 6A**



**Fig. 6B**



**Fig. 7**  
**AMORPHOUS INTERMEDIATE → RUTILE LOW**  
**TEMPERATURE CONVERSION PATHWAY.**

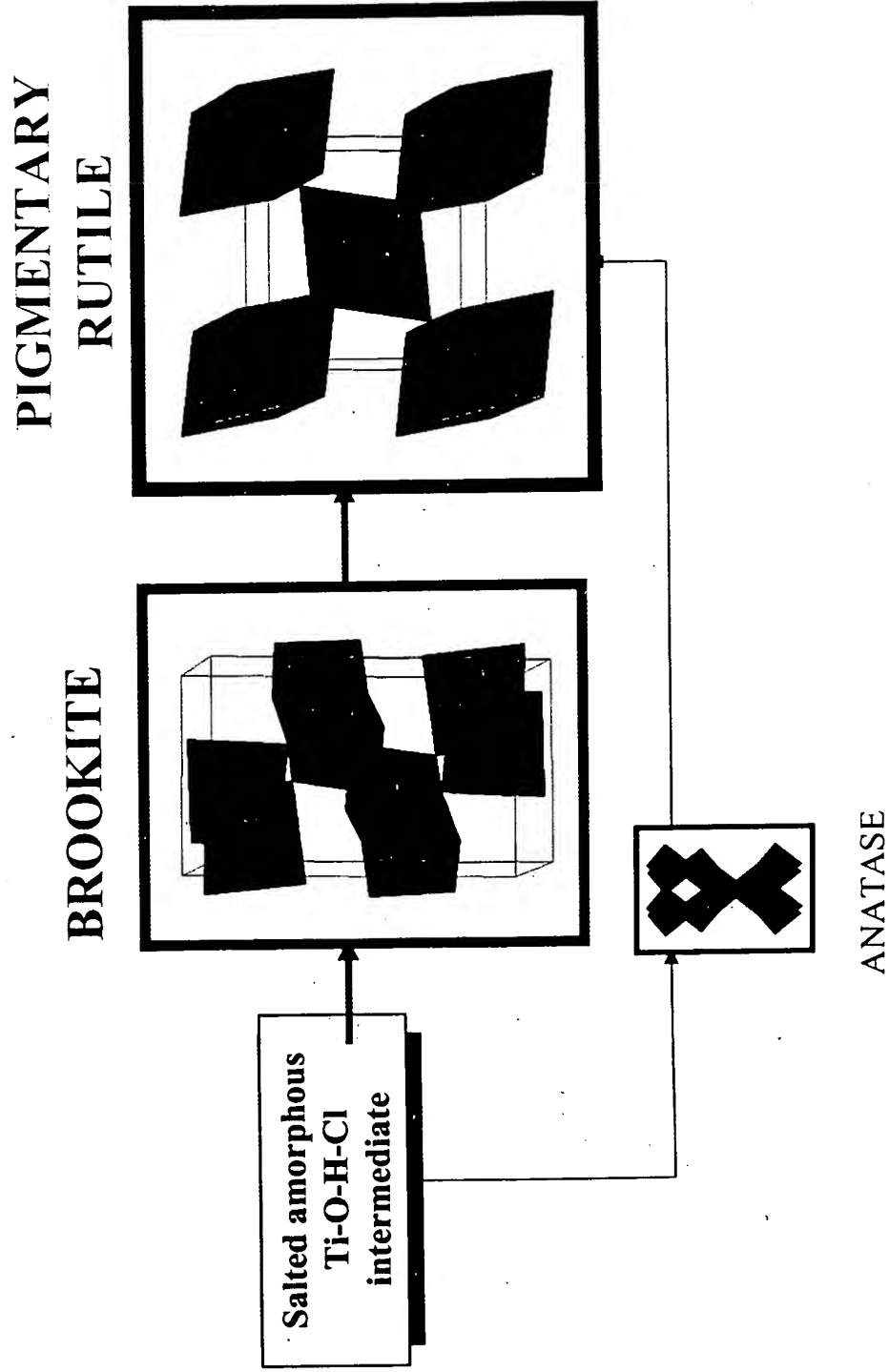
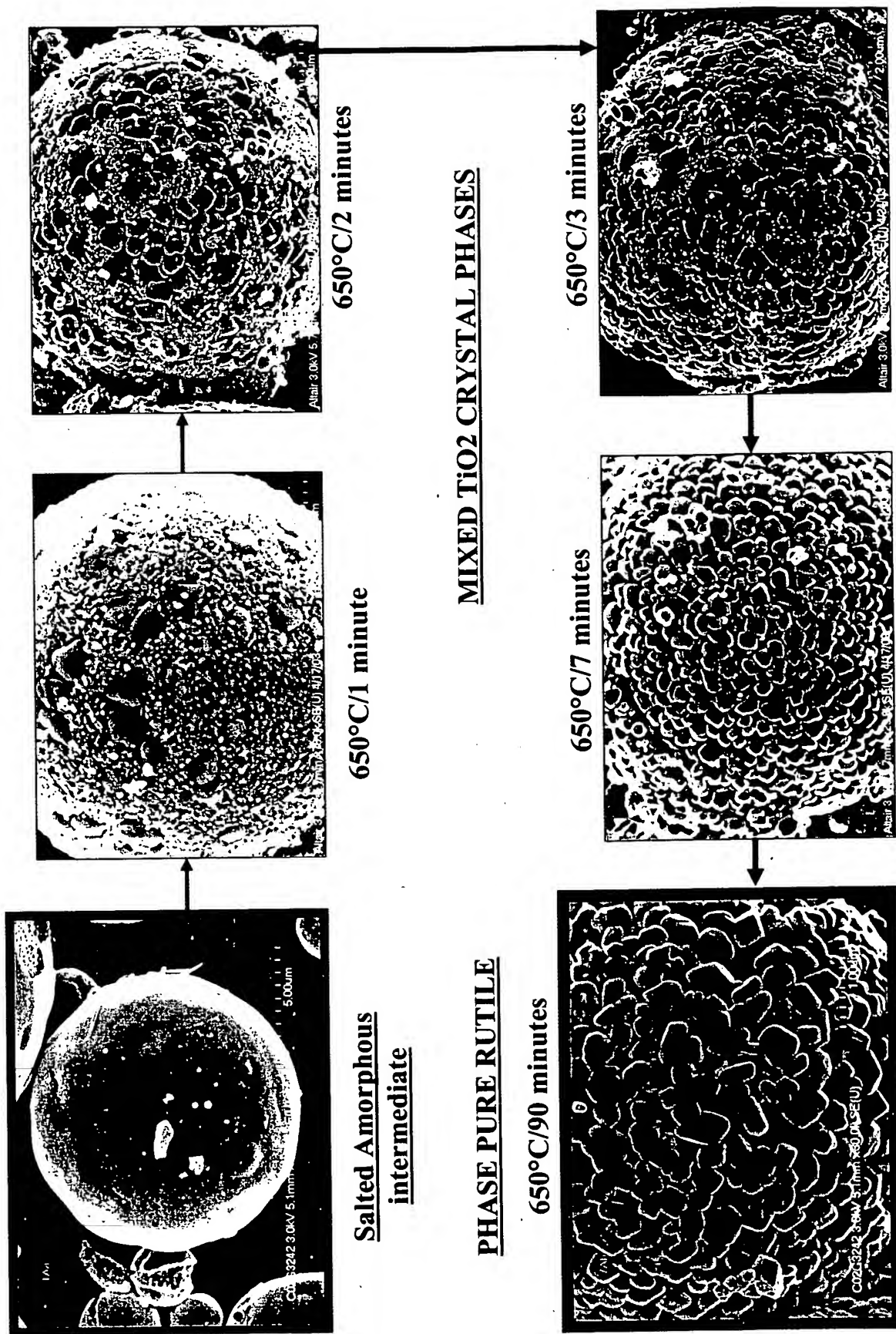




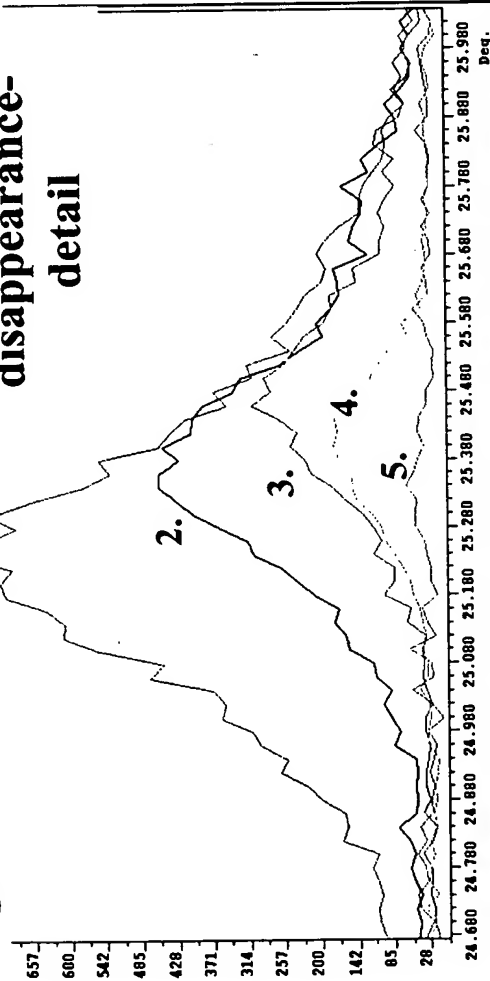
Fig. 8

# CALCINATION PROCESS AT 650°C.



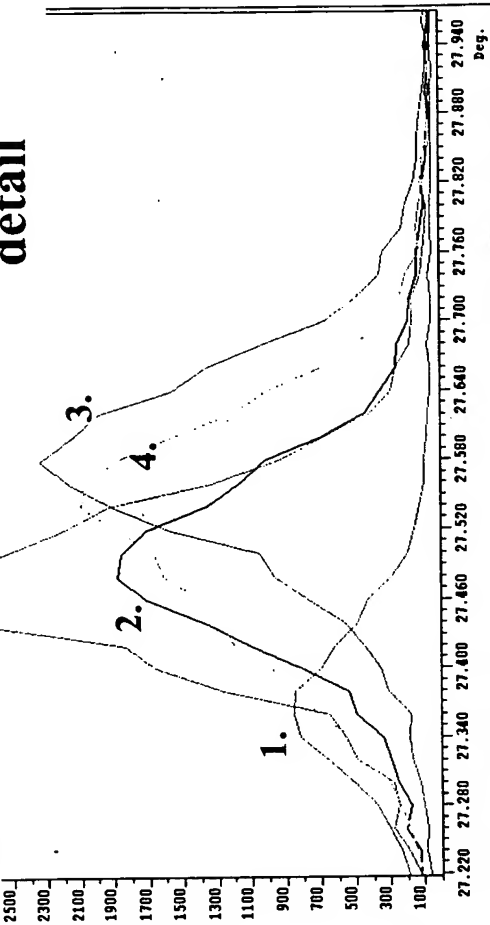
**Fig. 9A**

**1. Brookite/Anatase disappearance-detail**



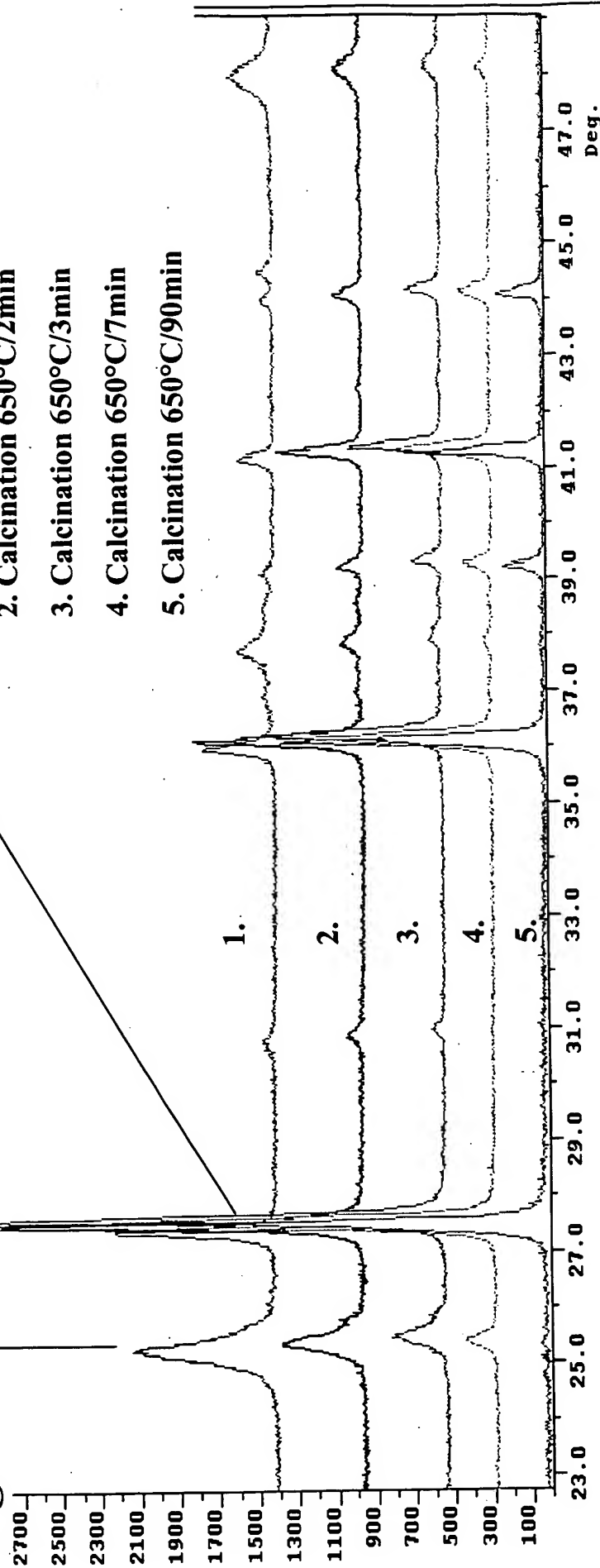
**Fig. 9B**

**5. Rutile growth-detail**



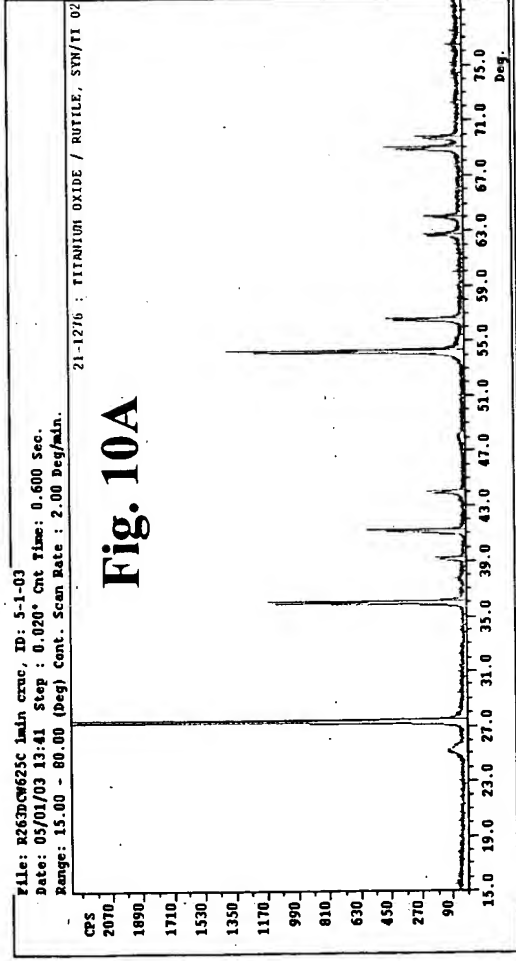
**Fig. 9**

1. Calcination 650°C/1min
2. Calcination 650°C/2min
3. Calcination 650°C/3min
4. Calcination 650°C/7min
5. Calcination 650°C/90min



**Fig. 10**

One minute calcination at 625°C

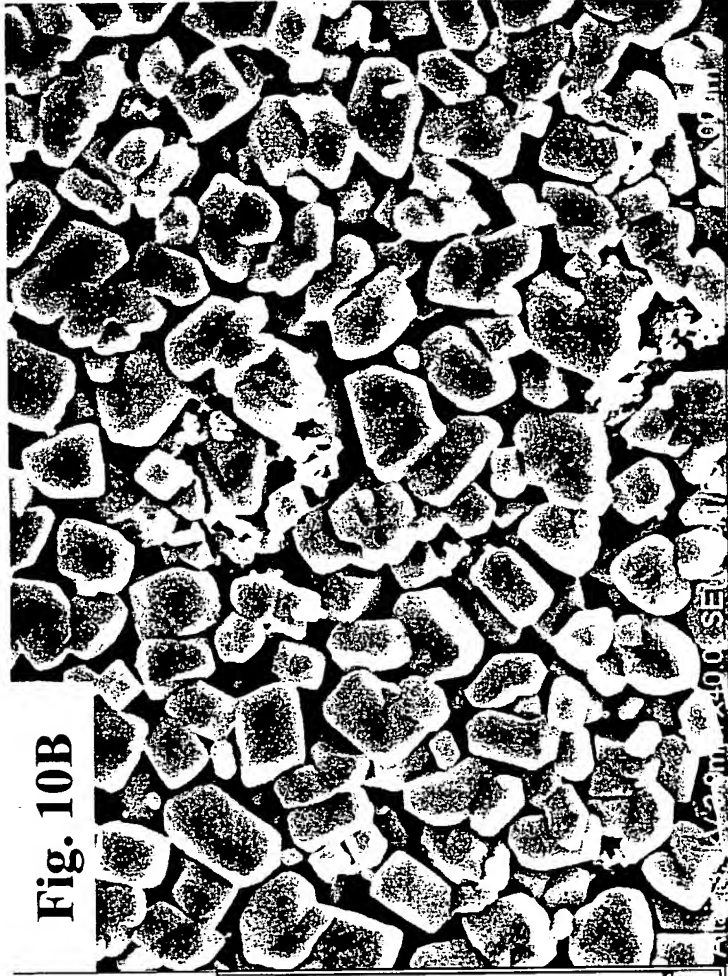


**Fig. 10A** XRD pattern of 625°C/1 minute flash calcined material-only traces of anatase phase are present.

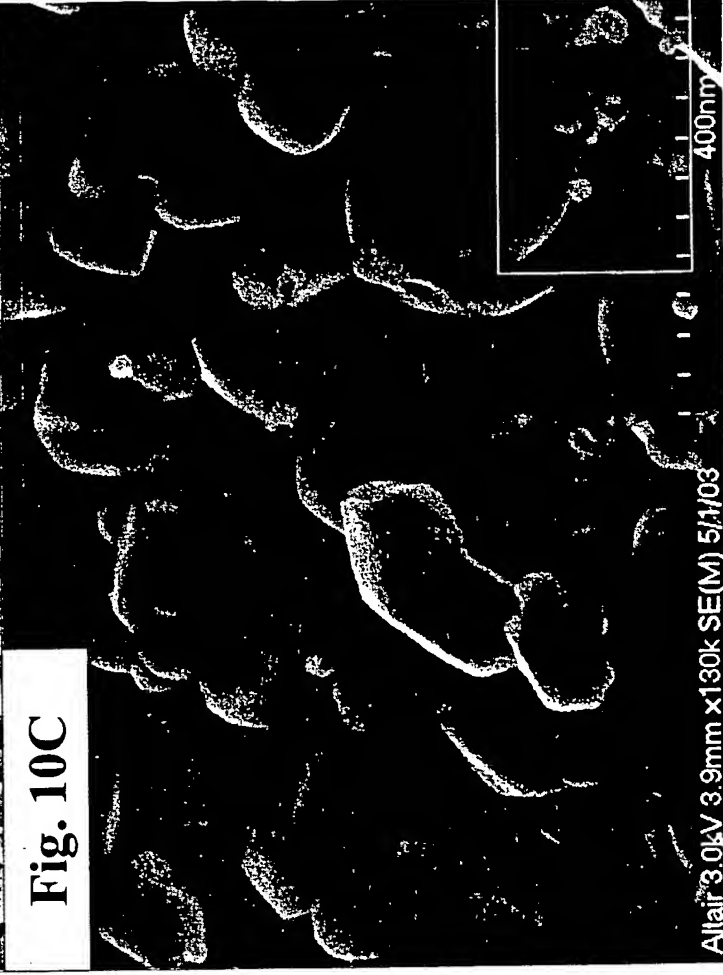
**Fig. 10B** SEM image of the flash calcined product shows that rutile formed very fast to well developed crystals of the right particle size.

**Fig. 10C** SEM image of flash calcined material-detail of rutile fused crystals and some traces of small anatase phase.

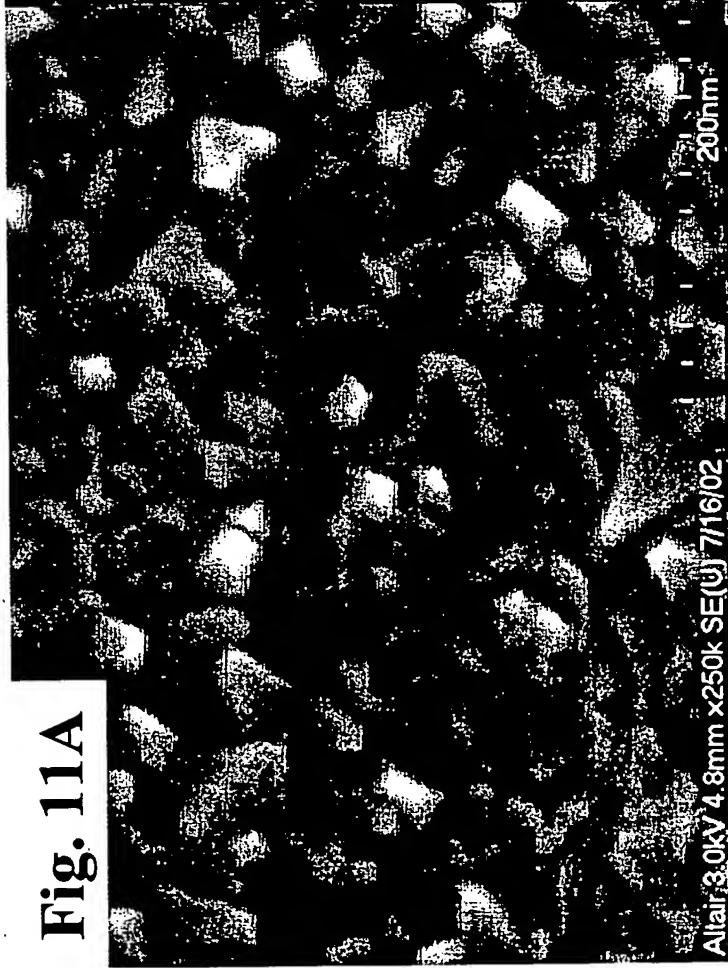
**Fig. 10B**



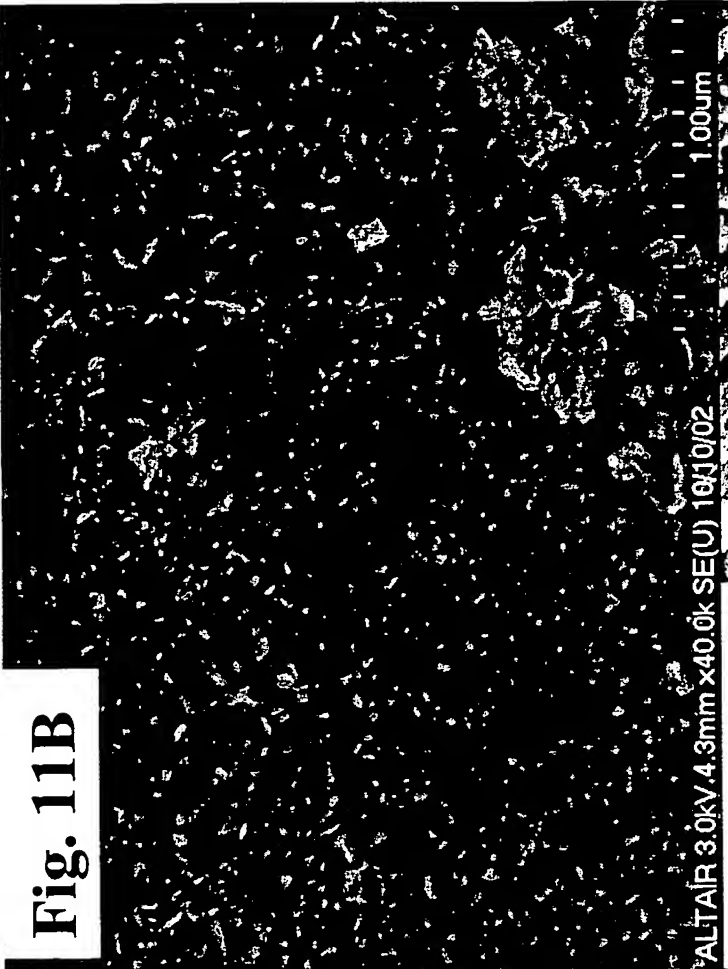
**Fig. 10C**



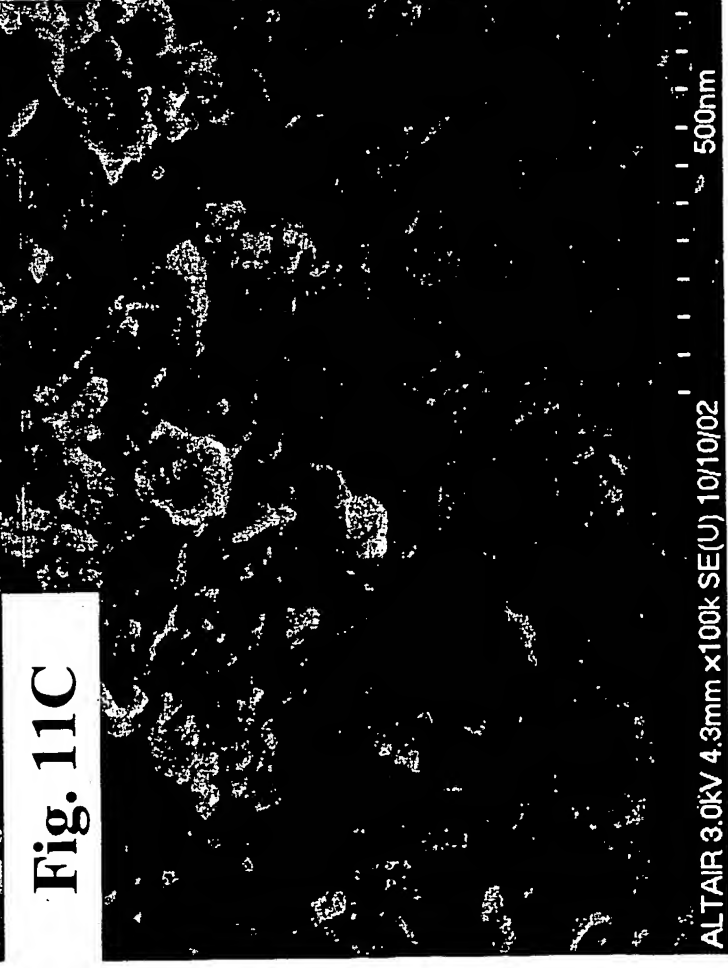
**Fig. 11A**



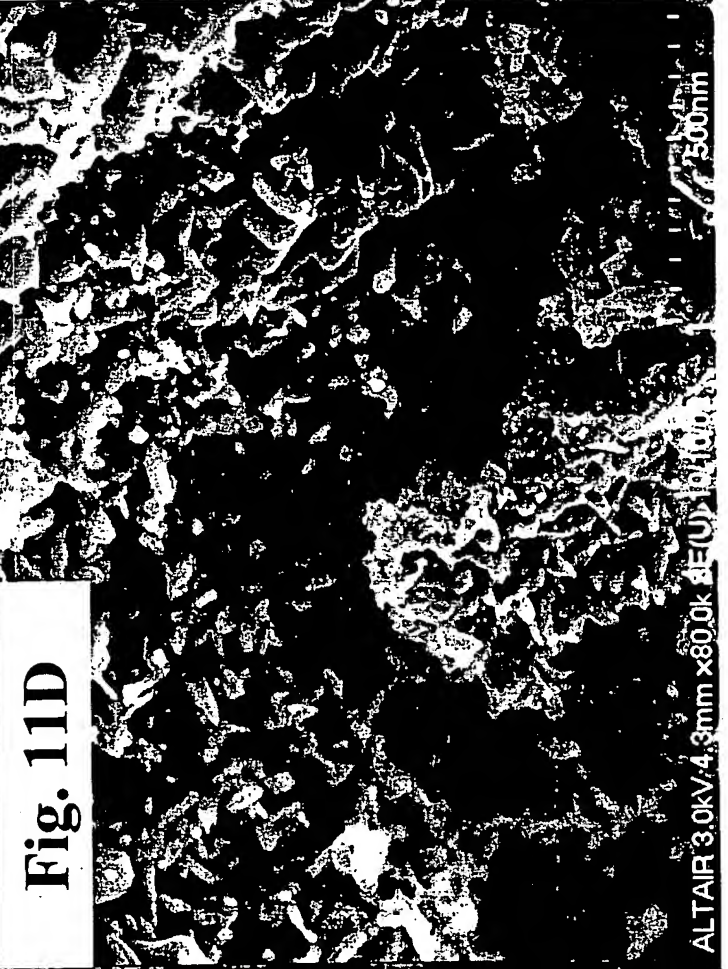
**Fig. 11B**



**Fig. 11C**



**Fig. 11D**



**Fig. 12**

**A detail of  
interrupted  
fusion**

Altair 3.0kV 5.8mm x110k SE(U) 4/17/03

500nm

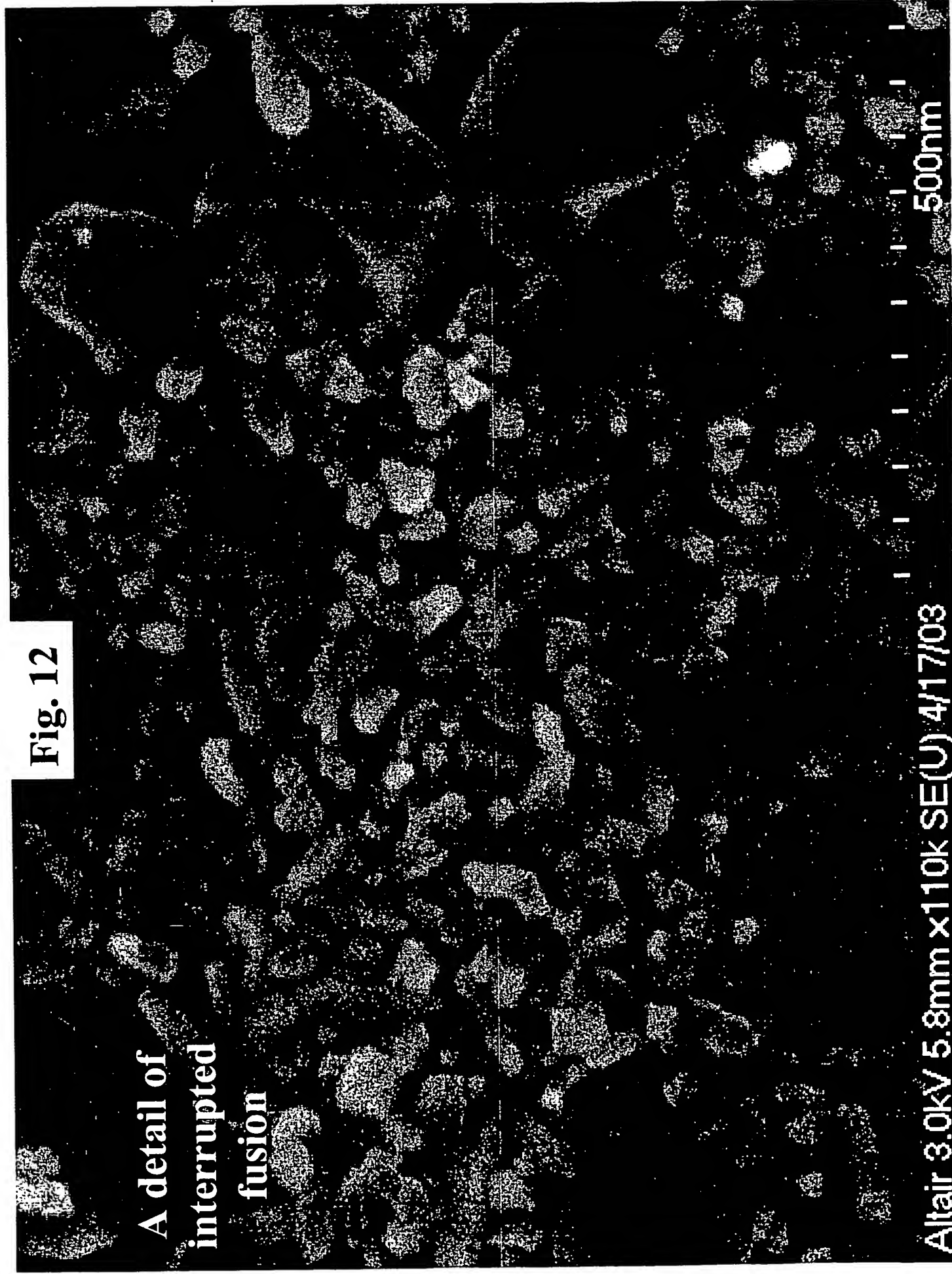
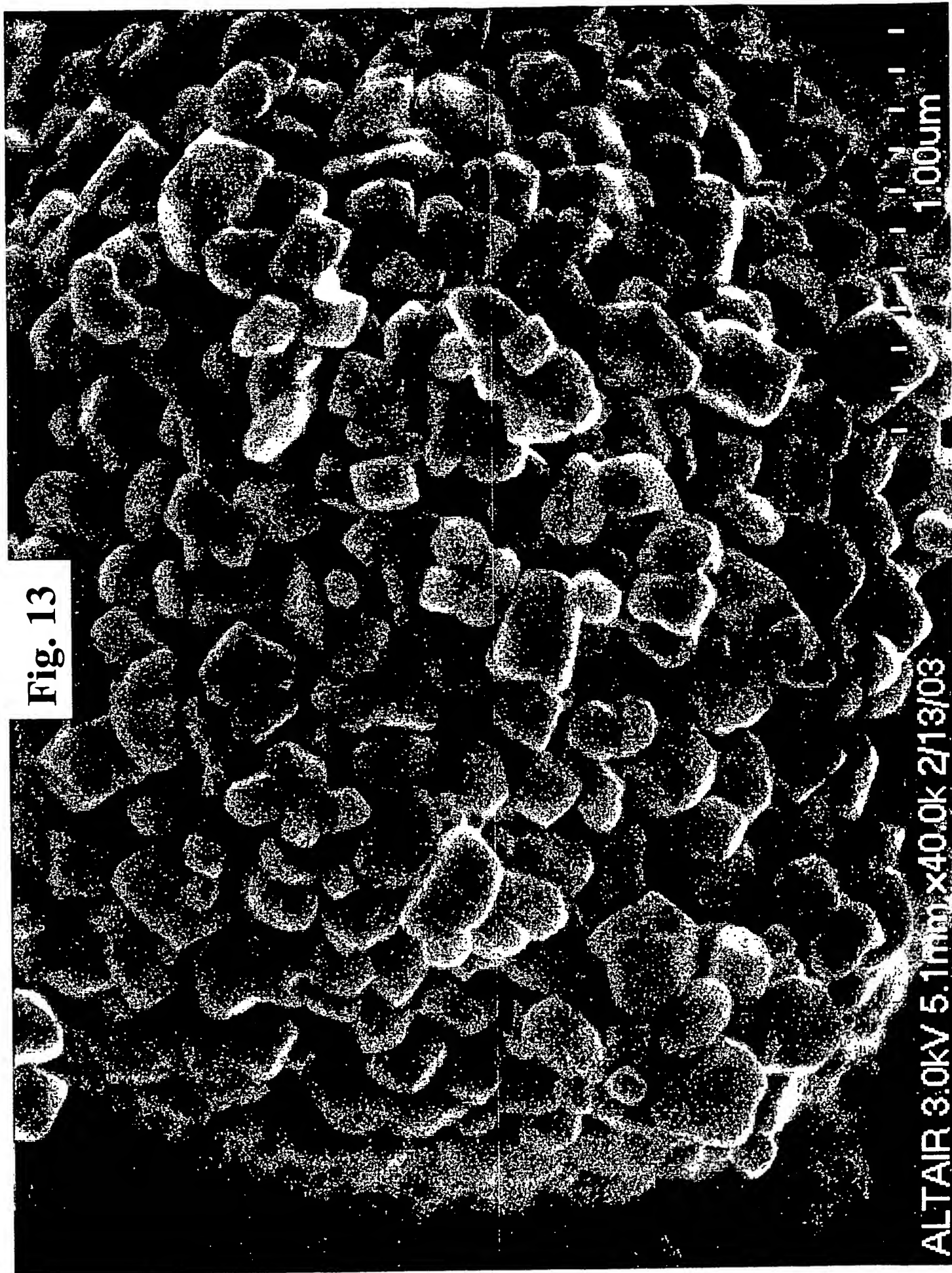




Fig. 13



**Fig. 14**

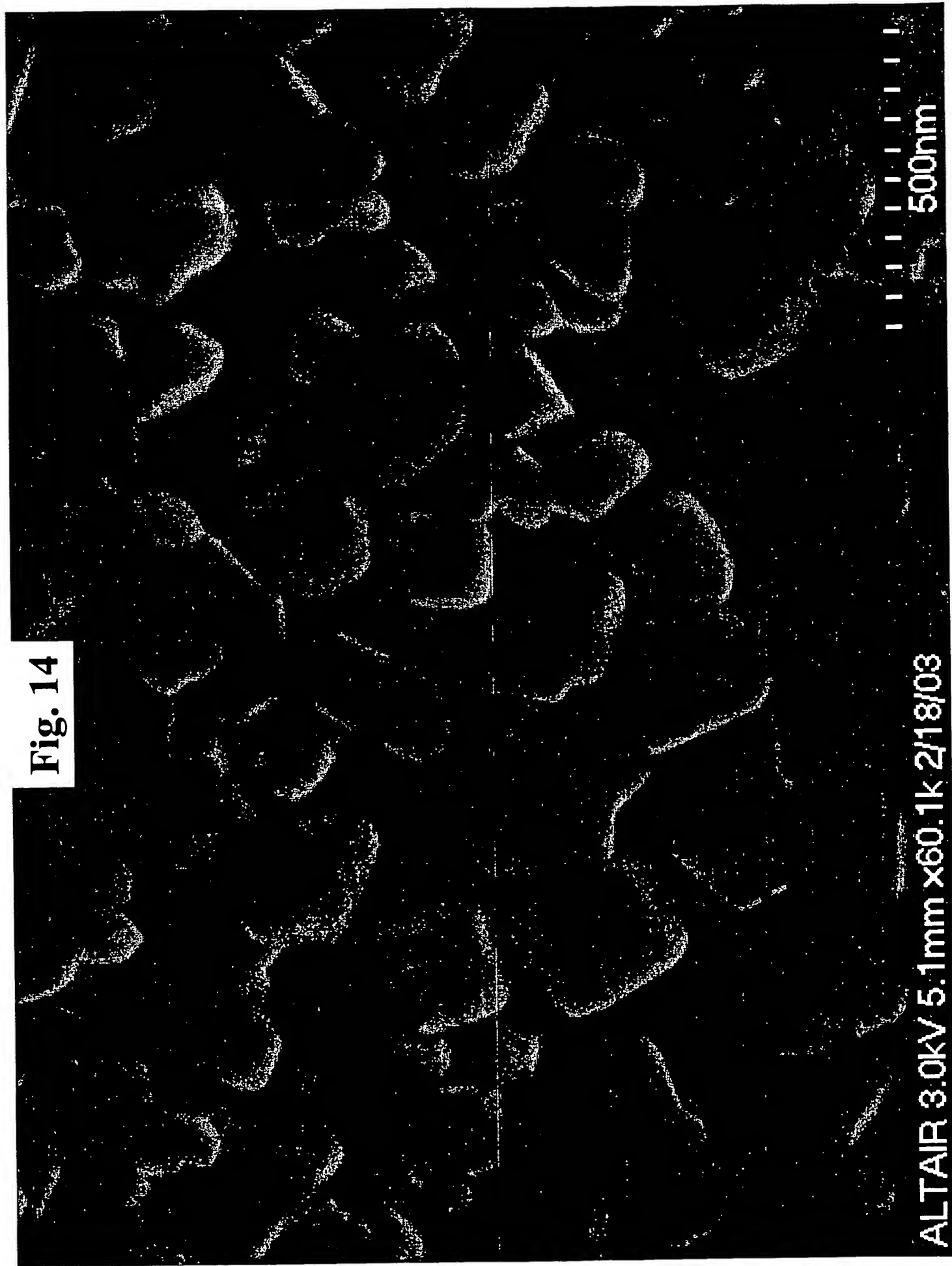
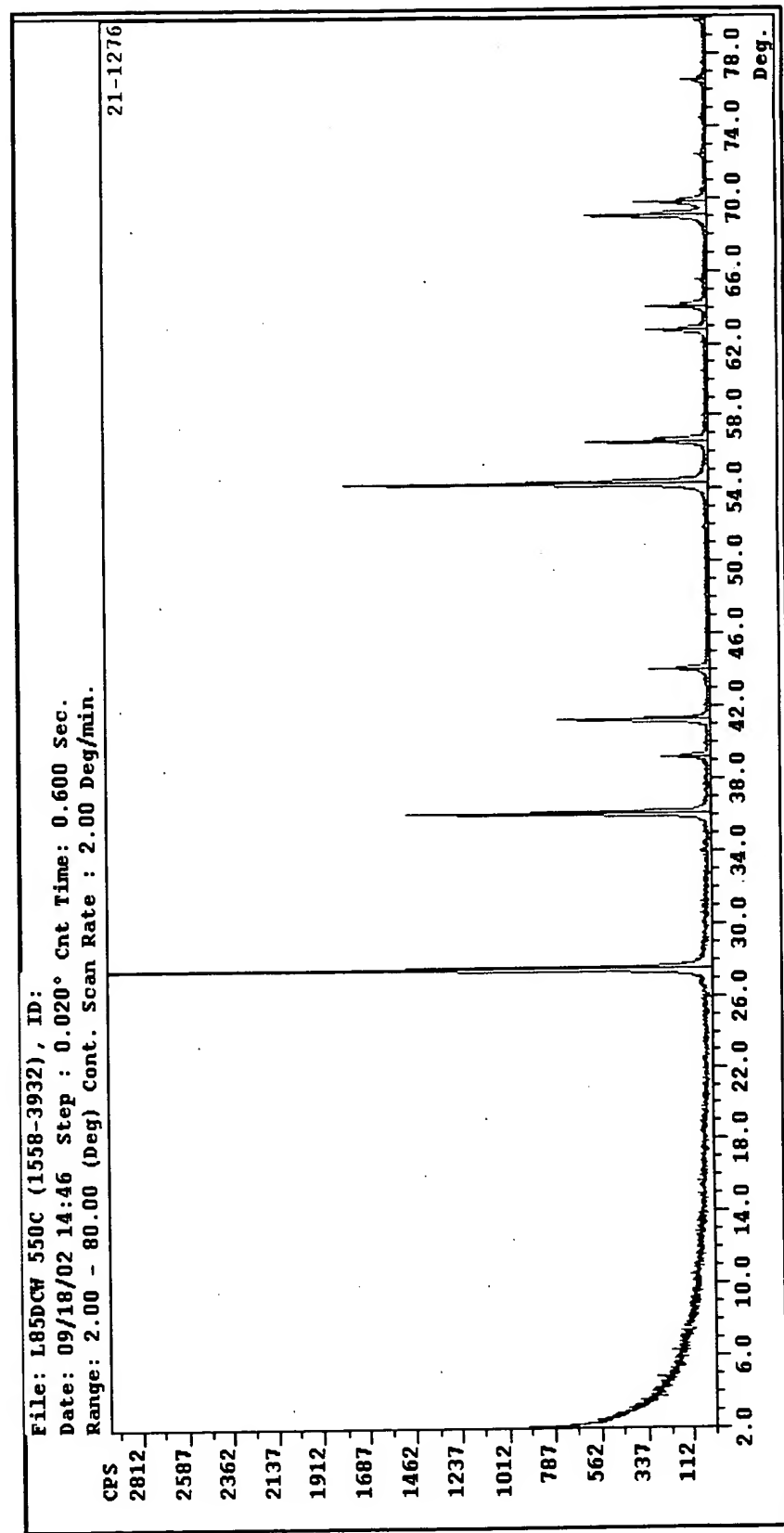


Fig. 15

XRD scan of the washed pigment base, calcined at 550°C.  
Card 21-1276 matches-phase pure rutile.





**Fig. 16**  
L85DCW Milling Profile Monitored by the Coulter Particle  
Size Analyzer LS230.

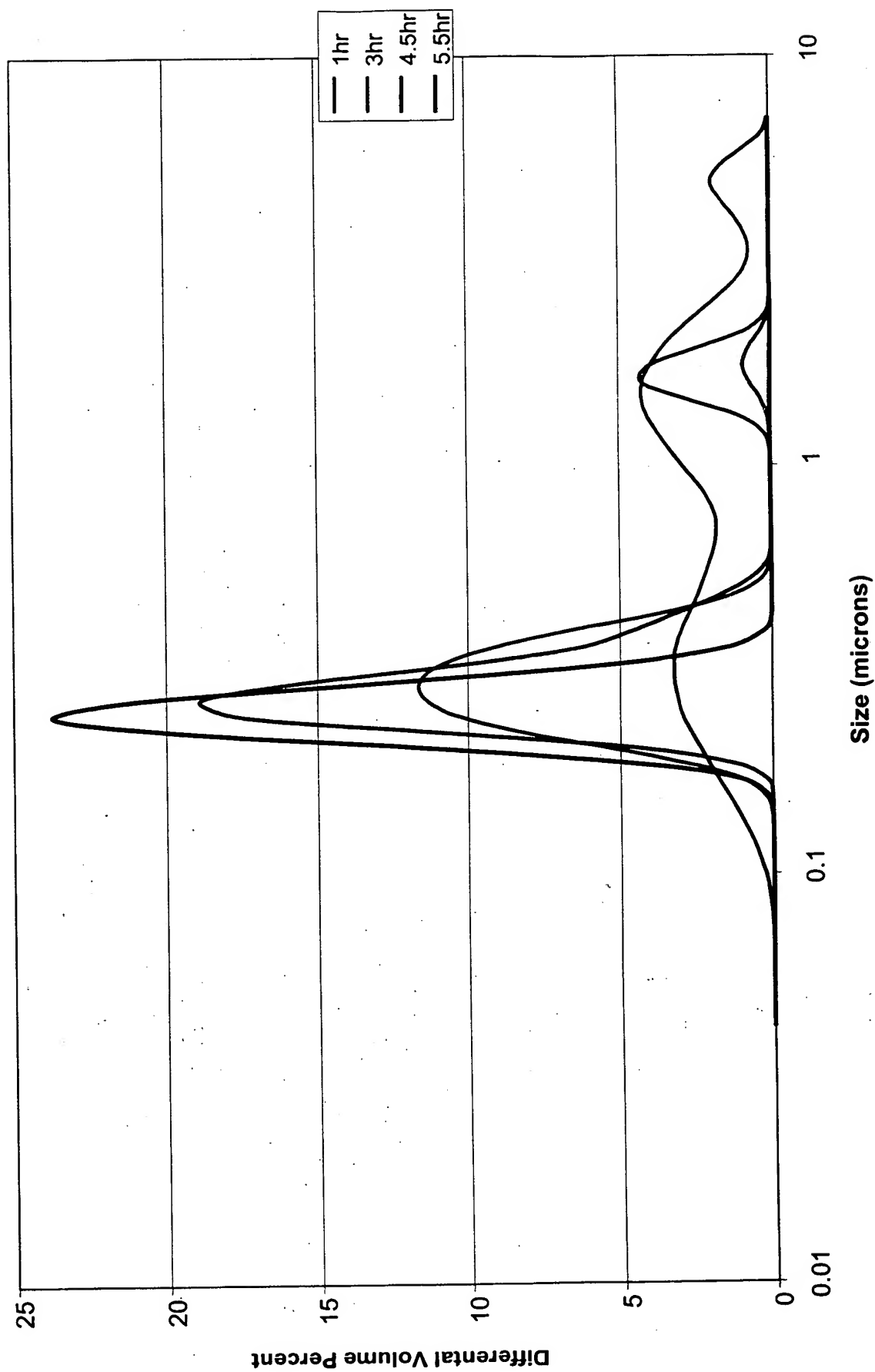
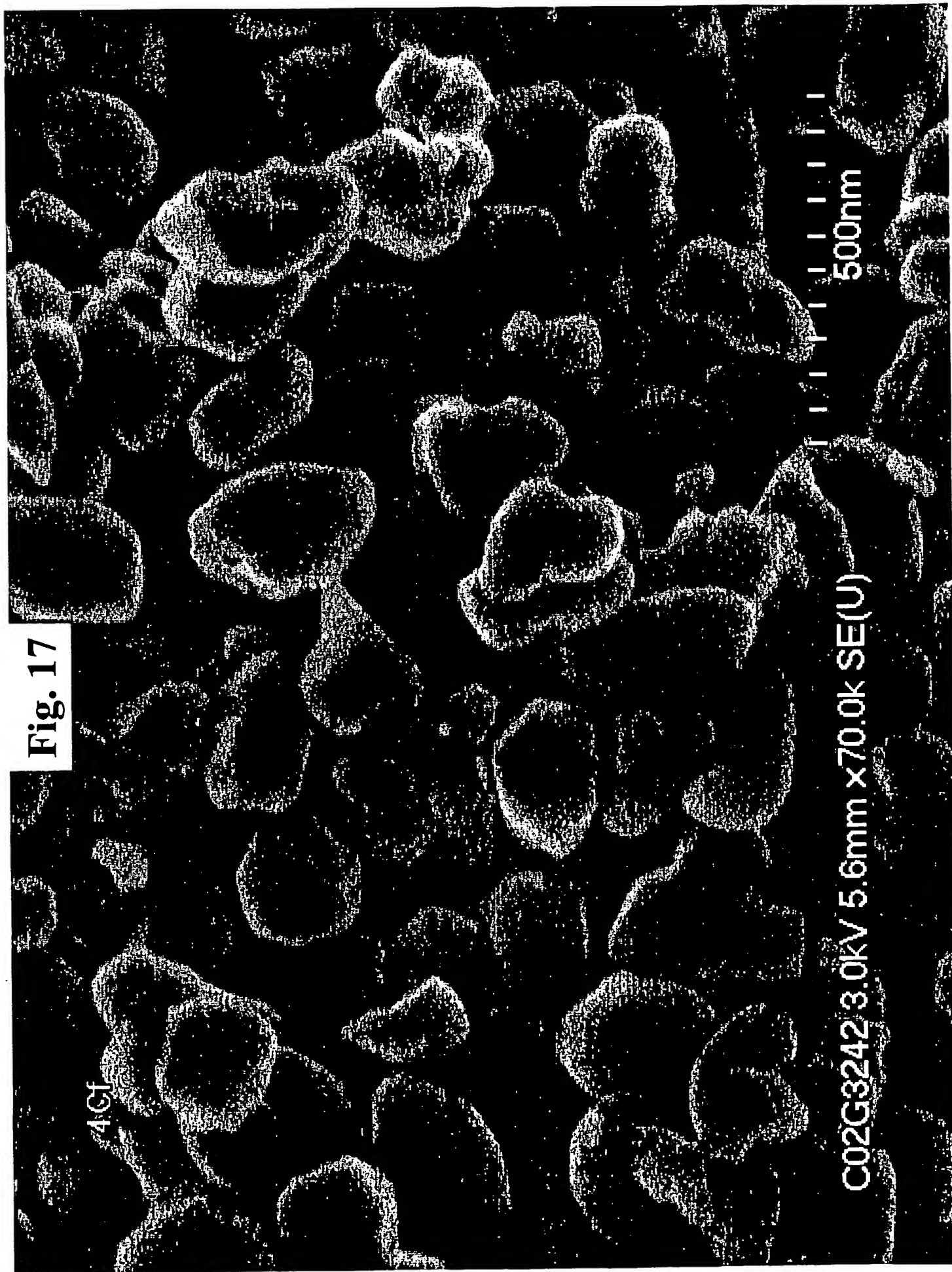


Fig. 17

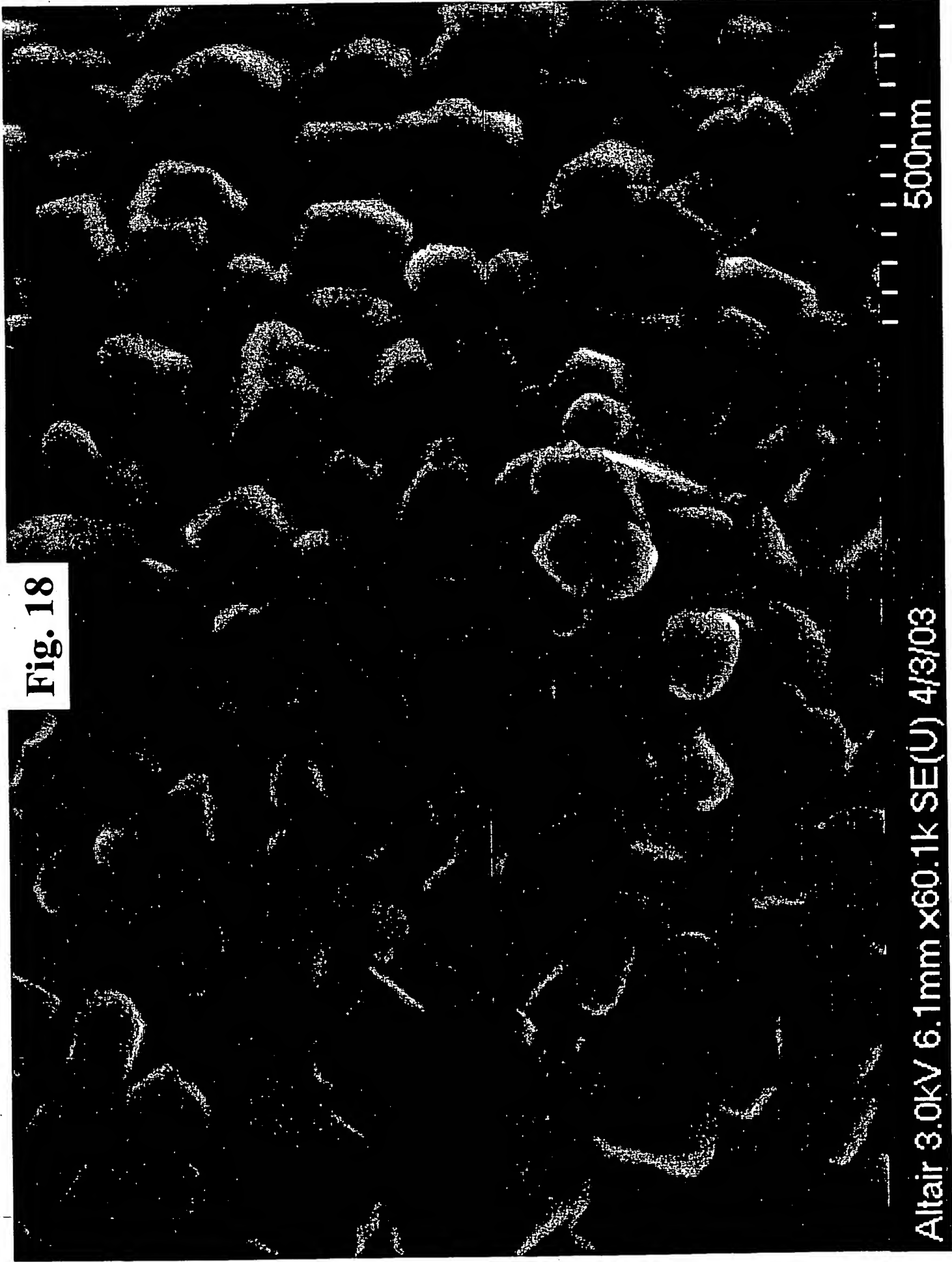
4Cf

C02G3242 3.0kV 5.6mm x70.0k SE(U)

500nm

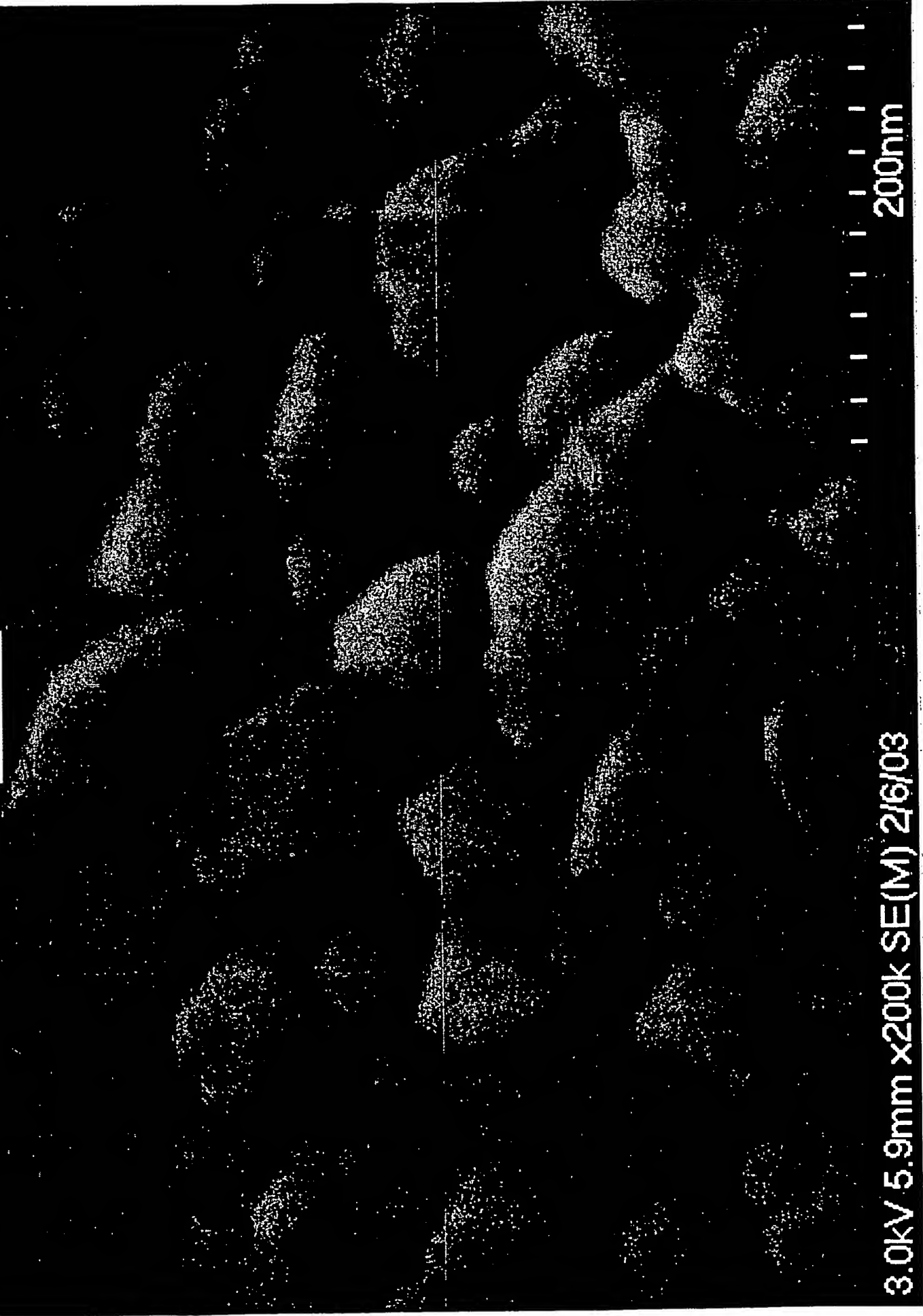


**Fig. 18**



Altair 3.0kV 6.1mm x60.1k SE(U) 4/3/03

Fig. 19



3.0kV 5.9mm x200k SE(M) 2/6/03